

An Extract

Of a Letter written Decemb. 28. 1666. by M. Auzout to the Publisher, concerning a way of his, for taking the Diameters of the Planets, and for knowing the Parallax of the Moon; as also the Reason, why in the Solar Eclipse above calculated, the Diameter of the Moon did increase about the end.

I did apply my self the last Summer to the taking of the *Diameters* of the Sun, Moon, and the other Planets, by a Method, which one M. Picard and my self have esteem'd by Us the best of all those, that have been practis'd hitherto; since we can take the *Diameters to Second Minutes*, being able to divide one foot into 24000. or 30000. parts, scarce failing as much as in one only part, so as we can in a manner be *assur'd*, not to deceive our selves in 3. or 4. *seconds*. I shall not now tell you my Observations, but I may very well assure you, that the *Diameter* of the *Sun* has not been much less in his *Apogee*, than 31. m. 37. or 40. sec. and certainly not lesse than 31. m. 35. sec. and that at present in his *Perigee* it passes not 32. m. 45. sec. and may be lesse by a second or two. That, which is at the present troublesome, is, that the *Vertical Diameter*, which is the most easie to take, is diminisht, even at *Noon*, by 8. or 9. sec. because of the *Refractions*, which are much greater in *Winter* than *Summer* at the same height; and that the *Horizontal Diameter* is difficult, because of the swift motion of the *Heavens*.

As for the *Moon*, I never yet found her *Diameter* less than 29. m. 44. or 45. sec. and I have not seen it pass 33. m. or if it hath, it was only by a few *seconds*. But I have not yet taken her in all the kinds of situations of the *Apogees* and *Perigees* which happen, with the *Conjunctions* and *Quadratures*. I do not mention all, what can be deduced from thence, but if you have Persons at *London*, that observe these *Diameters*, we may entertain our selves more about this Subject, another time. I shall only tell you, that I have found a Way to know the *Parallax* of the *Moon*, by the means of her *Diameter*: *Vid.* If on a day, when she is to be in her *Apogee* or *Perigee*, and in the most *Boreal Signes*, you take her *Diameter* towards the *Horizon*, and then towards the *South*, with her *Altitudes* above

above the Horizon. For, if the Observation of the Diameters be exact; as in these Situations the Moon changes not considerably her Distance from the Earth in 6. or 7. hours, the Difference of the Diameters will shew the Proportion there is of her Distance, with the Semi-diameter of the Earth. I do not enlarge, because that as soon as one hath this *Idea*, the rest is easie. The same would yet be practis'd better in the places, where the Moon passes through the *Zenith*, than here; for the greater the difference is of the Heights, the greater is that of the Diameters. I do not note (for it easily appears) that, if one were under the same *Meridian*, or the same *Azimuth* in two very distant places, and took at the same time the Diameter of the Moon, one would do the same thing; though this Method goes not to preciseness.

From what has been said, may be collected the reason of the Observation, which M. *Hevelius* made in the last *Eclipse of the Sun*, touching the increase of the Moon's Diameter about the end. I am exceeding glad, that a person, who probably knew not the cause of it, has made the Experiment: but it is strange, that until now no Astronomer has foreseen, that that should happen, nor given any precepts for the Change of the *Moons Diameter* in the *Eclipses of the Sun*, according to the places, where they should happen, and according to the Hour and Height, the Moon should have. For, what hapned in that *Eclipse of Augmentation*, would have faln out contrarily, if it had been in the Evening; for, the Moon, which in that *Eclipse*, that began in the Morning, was higher about the end than at the beginning, was nearer us, and consequently was to appear bigger: But if the *Eclipse* should happen in the Evening, she would be lower at the end, and therefore more distant from us, and consequently appear lesser. So also in two different places, wherof one should have the Eclipse in the Morning, and the other at Noon, the Moon should appear bigger to him that hath it at Noon: And she must likewise appear bigger to those, who shall have a lesser *Elevation of the Pole* under the same *Meridian*, because the Moon will be nearer them.

I wish, I could satisfie you about the *Optick Glasses* of Signior *Burattini* in *Poland*, which he hath sent hither; but I have not yet seen their performances my self. I only saw once the *Glasses*, which

which are perfectly well wrought and well polish'd. Those, that have tried them, find them very good, but they are only, the one of 10, the other of 8. foot. A good Astronomer told me, that they would bear a great *Aperture* in respect of their length.

I do not well know, what to say to yours concerning M. *Hevelius*. Mean while, the interest of truth, and the obliging manner, he has treated me with, engage me to answer him, in the matter of the *Comets*: I am perswaded, I shall convince him; but since he hath taken the *Illustrious Royal Society* for Judge, I accept that with all my heart.

*A Relation
of the loss of the Way to prepare the Bononian Stone
for shining.*

Though several Persons have pretended to know the Art of preparing and calcining the *Bononian Stone*, for keeping a while the Light once imbibed; yet there hath been indeed but one, who had the true secret of performing it. This was an *Ecclesiastick*, who is now dead, without having left that skill of his to any one, as Letters from *Italy* and *France*, some while since, did inform. There is no substance, in Nature, known to us, that hath the effect of this Stone; so that (to the shame of the present Age) this *Phænomenon* is not like to be found any where, but in Books, except some happy *Genius* light upon the same or the like skill *.

[* It is hoped notwithstanding which also a late Letter from abroad does hint) that some or other of the Italian Virtuosi at Florence have secured this Secret.]

*A Description
of a Swedish Stone, which affords Sulphur, Vitriol,
Allum, and Minium.*

This was communicated to the R. Society by Sir *Gilbert Talbot Knight*, a Worthy Member of that Body, as he had received it in *Denmark*, being his Majesties Extraordinary Envoy there; as follows,

There is a Stone in *Sweden* of a Yellow Colour, intermixed with streaks of white (as if composed of Gold and Silver) and heav, withal. It is found in firm Rocks, and runs in Veins, upon